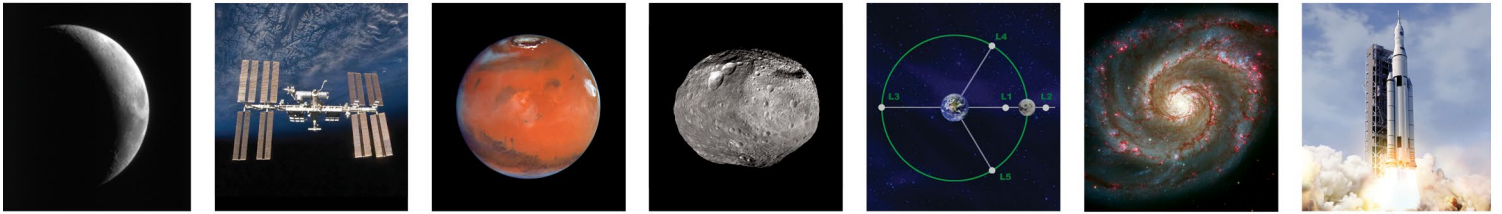




# Space Launch System

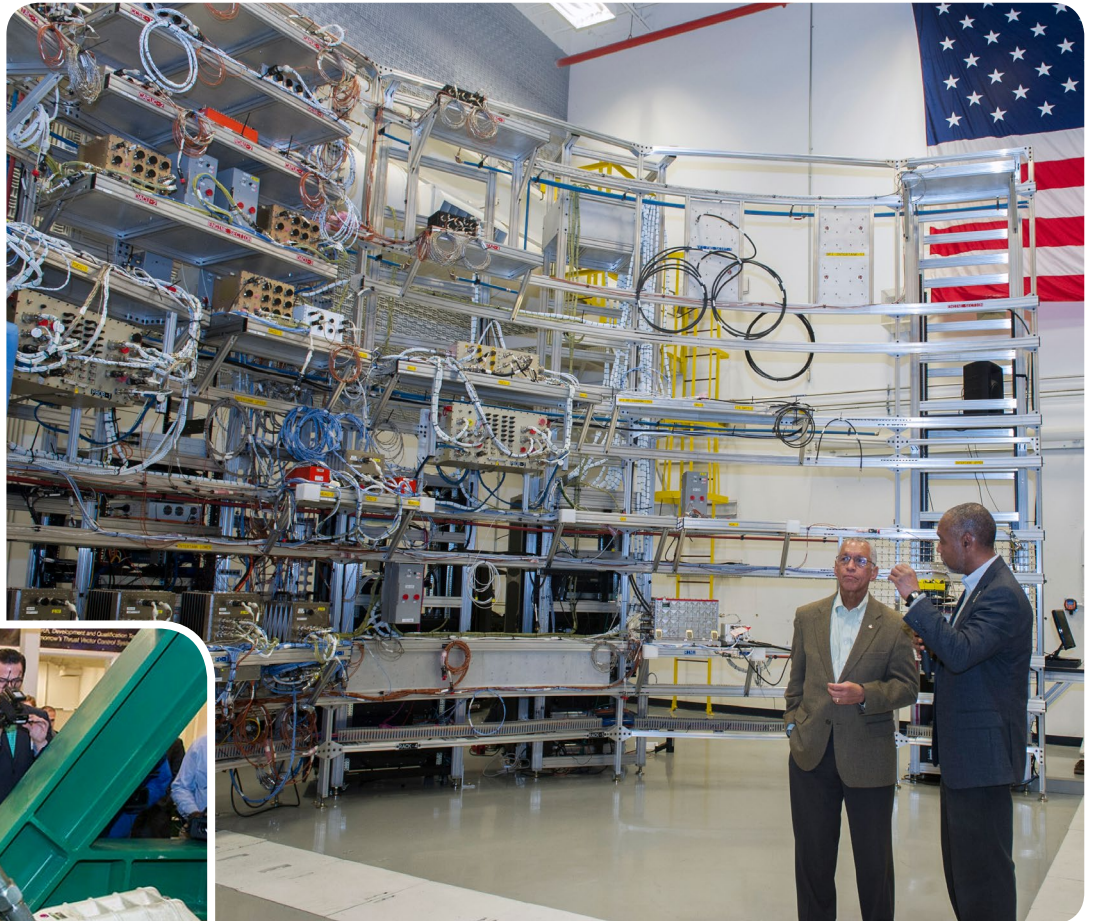
## Highlights

March 2014



## NASA Administrator Visits Marshall, Views SLS Progress

While visiting the Marshall Space Flight Center on March 14, NASA Administrator Charles Bolden, left, talks with Kurt Jackson, SLS software lead engineer, about progress on the SLS avionics system. Bolden toured the Systems Integration Laboratory, where the avionics units are arranged in flight configuration, along with booster hardware. The modern technology is being integrated and tested together to ultimately guide the entire vehicle. He also watched flight software simulations of how the SLS will perform during launch. (NASA/MSFC) ►



◀ Bolden, left, checks out an actuator at Marshall's Thrust Vector Control Test Laboratory. The hardware will help guide the SLS propulsion system during flight. (NASA/MSFC)

## Advancing Progress on SLS Avionics



From left, Wayne Arrington, a Boeing Co. technician, and Steve Presti, a mechanical technician at NASA's Marshall Space Flight Center, install Developmental Flight Instrumentation Data Acquisition Units in Marshall's Systems Integration and Test Facility. The units are part of SLS core stage avionics. The avionics, which include hardware, software and operating systems for the SLS, are arranged in flight configuration in the facility for testing. The new Data Acquisition Units will monitor vehicle behavior in flight—like acceleration, thermal environments, shock and vibration. That data will then be used to validate previous ground tests and analyses models that were used in the development of the SLS vehicle. (NASA/MSFC)

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**Nick Chang**

Electrical System Design Engineer



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**Tannen VanZwieten**

Flight Controls Engineer



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## NASA's Super Guppy Makes a Special Delivery



NASA's Marshall Space Flight Center is set to begin a series of structural and pressure tests on one of the largest composite cryogenic fuel tanks ever manufactured. The tank was delivered March 26 on NASA's Super Guppy aircraft and unloaded March 27. Advanced composite cryotanks will help enable NASA's future deep space exploration missions. For more information, [click here](#). (NASA/MSFC)

## Spaceflight Partners: American Synthetic Rubber Co.

*EDITOR'S NOTE: Every month, SLS Highlights turns the spotlight on one of the industry partners helping to create the largest rocket ever built for human space exploration. In this issue, we profile American Synthetic Rubber Co. of Louisville, Ky.*

American Synthetic Rubber Co. (ASRC), a division of Michelin North America, supplies HB Polymer to ATK for the SLS. HB Polymer is the inert binder for solid rocket propellant that holds the other ingredients together in a cured matrix.

ASRC produced the HB Polymer for the first three SLS demonstration motors (DM-1, DM-2 and DM-3), and has also supplied the polymer for the qualification motors (QM-1 and QM-2). QM-1 is on track to be static tested in late 2014/early 2015, and the QM-2 test firing is scheduled for late 2015.

In 2013, ASRC completed production and delivered HB Polymer for the Exploration Mission-1 (EM-1), an uncrewed flight of the SLS, targeted for 2017. EM-1 flight mission objectives are to demonstrate integrated system performance of the SLS rocket and the spacecraft prior to the crewed flight of Exploration Mission-2 (EM-2).

The HB Polymer for the left motor of EM-2 has been produced, and approximately 179,000 pounds of the HB Polymer will be delivered by five tank trucks to ATK by May 19. Remaining production for the right motor is scheduled to begin in October and delivered in 2015.

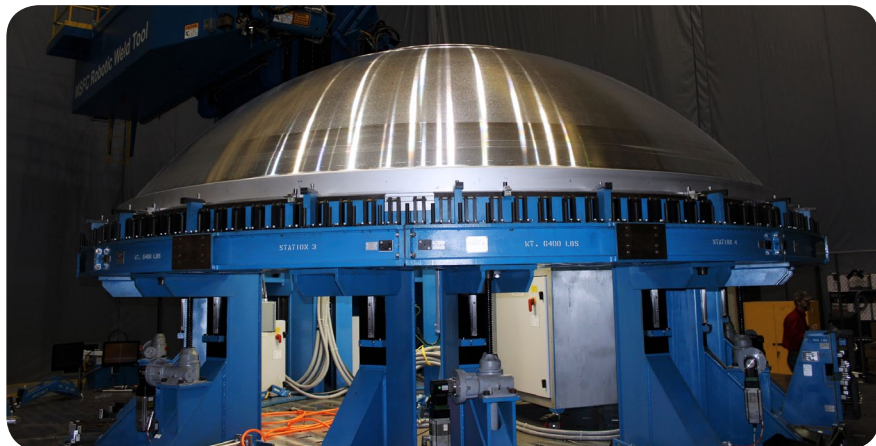


American Synthetic Rubber Co. of Louisville, Ky., supplies HB Polymer to ATK for the SLS. HB Polymer is the inert binder for solid rocket propellant that holds the other ingredients together in a cured matrix. (ASRC)

EM-2 will be the first test of the integrated SLS and Orion system with a crew.

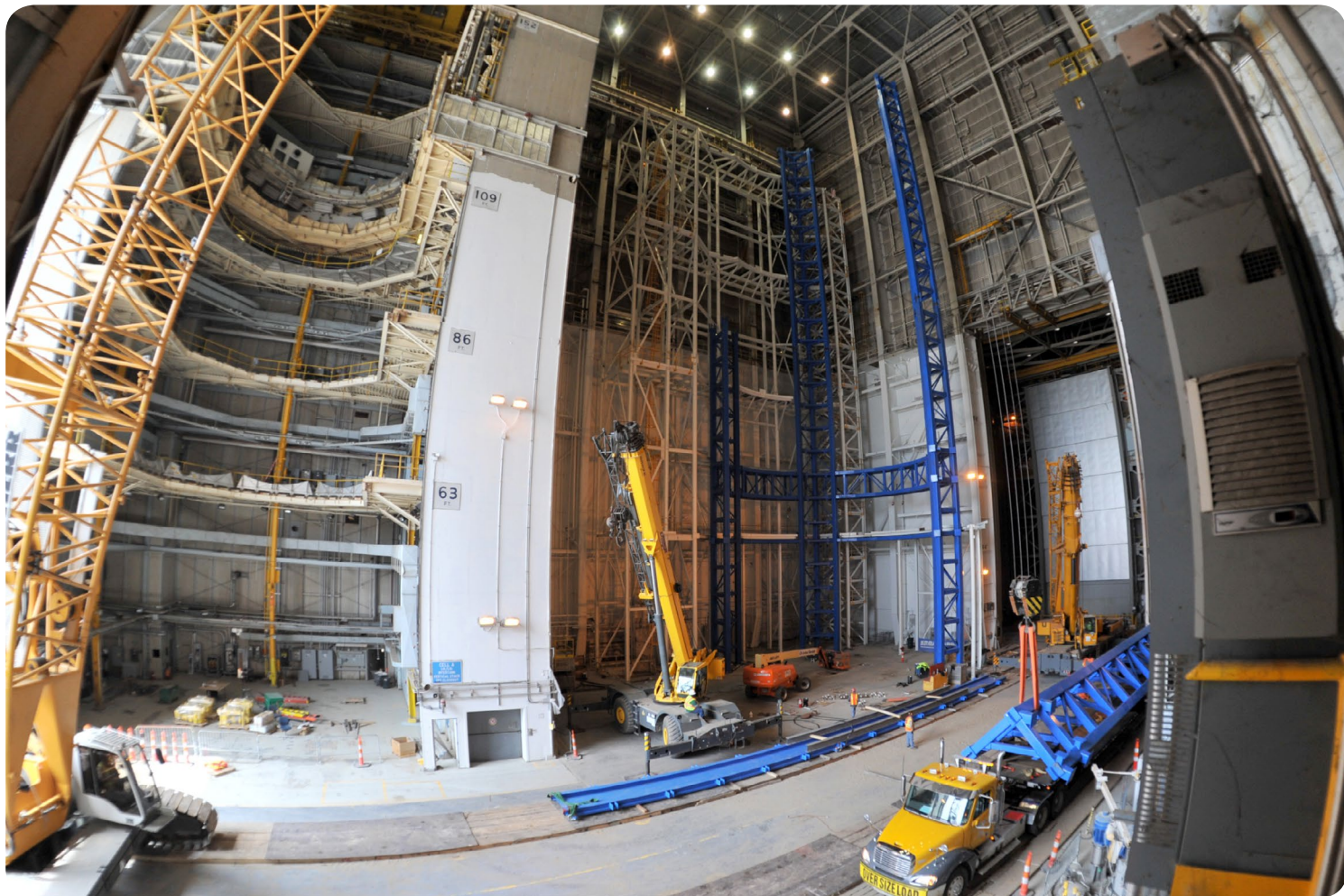
“ATK has a long-standing working relationship with ASRC, and we appreciate all the great products they have contributed to America’s space program,” said Fred Brasfield, ATK’s vice president, Next-Generation Booster. “We look forward to continuing to work with ASRC, as NASA and our country utilize SLS to pursue deep space exploration.”

## Advanced Booster Work Continues at Marshall for SLS Cryotank



Using the robotic weld tool at NASA's Marshall Space Flight Center, the Dynetics of Huntsville, Ala., friction stir weld team successfully completed the first two dome to y-ring welds as part of its work on a full-scale cryogenic tank for the SLS. The cryogenic tank is an 18-foot diameter welded aluminum structure that weighs more than 20,000 pounds and is composed of some of the thickest material ever welded on that tool. The two-dome assemblies will be welded to barrels on the vertical assembly tool at Marshall later this spring to form a complete tank. This will be the first full-scale hardware to be welded on the vertical assembly tool. For more information, [click here](#). (NASA/MSFC)

## Construction Continues on World's Largest Welding Tool



Progress continues on the Vertical Assembly Center (VAC) at NASA's Michoud Assembly Facility in New Orleans. The VAC, measuring 170 feet tall and 78 feet wide, will be one of the world's largest welding tools for the SLS core stage. It is scheduled to be completed this summer. (NASA/Michoud)

## SLS Core Stage Model 'Sounds' Off for Testing



A 5-percent scale model of the SLS core stage fires up for another round of acoustic testing at NASA's Marshall Space Flight Center. The acoustic tests, which began in January, will show how powerful noise from the engines and boosters can impact the rocket and crew, especially at liftoff. Data from the tests will help verify the rocket's design and help develop an effective suppression system to stifle the sound. The current test series, which began March 20, will be used to determine the noise reduction capabilities of the water suppression system at NASA's Stennis Space Center. The system will be used for core stage "green run" testing. "Green run" testing ensures all stage and engine parts have been exposed to flight-like environments prior to use on a mission. (NASA/MSFC)

## SLS On the Road...

SLS Program's Trey Cate, right, talks with the news media at the NASA booth at South by Southwest—an annual set of film, interactive, and music festivals and conferences in Austin, Texas, in March. Members of the SLS team talked to thousands of participants at the annual event about America's next great rocket. (NASA/MSFC)



NASA leadership had the opportunity to talk about America's next great rocket at the SLS/Orion Supplier's Conference held March 11-12 in Washington. From left, panelists at the conference included Marshall Space Flight Center Director Patrick Scheuermann; Ground System Development and Operations Program Manager Michael Bolger; Johnson Space Center Director Ellen Ochoa; SLS Program Manager Todd May; NASA Deputy Associate Administrator for Exploration Systems Development Dan Dumbacher; and Orion Deputy Program Manager Mark Kirasich. (NASA/MSFC)



NASA's Michoud Assembly Facility Director Roy Malone, center in background, talks to students about the work being done at Michoud in support of the SLS at Louisiana State University's Space Day on March 28. The educational outreach event—targeting middle schoolers—was held to encourage and inspire students to learn about science, technology, engineering and math (STEM) by participating in space-themed activities throughout the day. (NASA/Michoud)



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### SLS on Deck:

- USA Science & Engineering Festival
- Scale Model Acoustic Testing (SMAT) continues
- Booster forward skirt structural test